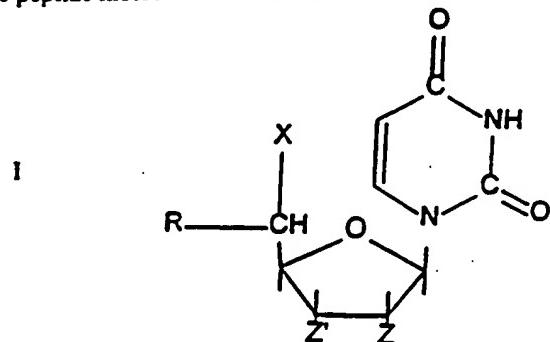


WE CLAIM:

1. A combinatorial library comprising a predetermined collection of nucleoside peptide molecules for inhibiting the transfer of a sugar from a selected sugar nucleotide donor to a selected acceptor by a carbohydrate processing enzyme wherein a nucleoside peptide molecule comprises (a) a nucleoside monomer; (b) a spacer monomer coupled to the nucleoside monomer wherein the spacer monomer comprises one or more amide linked amino acid residues or mimetics thereof; and (c) cap monomers attached to the spacer monomer; wherein the nucleoside peptide molecules differ from each other as to the identity of at least one element of the nucleoside monomer, spacer monomer or cap monomers.
- 10 2. A combinatorial library as claimed in claim 1 wherein the carbohydrate processing enzyme is a glycosyltransferase involved in the biosynthesis of glycoproteins, glycolipids, or glycosyl phosphatidyl inositols.
- 15 3. A combinatorial library as claimed in claim 2 wherein the carbohydrate processing enzyme is an N-acetylglucosaminyltransferase I, II, III, IV, or V, or β -1,3-galactosyl-O-glycosyl-glycoprotein β 1,6-N-acetylglucosaminyl transferase (core 2 GlcNAc).
- 20 4. A combinatorial library as claimed in claim 1, 2, or 3 wherein the nucleoside monomer is uridyl, 2'-deoxyuridyl, or 5'-amino-5'-deoxy-2',3'-O-isopropylidene uridyl.
- 25 5. A combinatorial library as claimed in any one of the preceding claims wherein the cap monomer is methyl (Me), formyl (CHO), ethyl (Et), acetyl (Ac), t-butyl (t-bu), anisyl, trifluoroacetyl (Tfa), benzoyl (Bz), 4-methylbenzyl (Meb), thioanizyl, thiocresyl, benzyloxymethyl, 4-nitrophenyl (Pnp), benzyloxycarbonyl (Z), 2-nitrobenzoyl (NBz), 2-nitrophenylsulphenyl (Nps), 4-toluenesulphonyl (Tosyl, Tos), pentafluorophenyl (Pfp), diphenylmethyl (Dpm), 2-chlorobenzyloxycarbonyl (Cl-Z), 2,4,5-trichlorophenyl, 2-bromobenzyloxycarbonyl (Br-Z), triphenylmethyl (Trityl, Trt), 2,2,5,7,8-pentamethyl-chroman-6-sulphonyl (Pmc), t-butyloxycarbonyl (Boc), benzyl (Bzl), benzyloxymethyl (Bom), and 9-fluorenylmethyloxycarbonyl (Fmoc).
- 30 6. A combinatorial library as claimed in any one of the preceding claims wherein the spacer monomer is a single amide linked amino acid, an amide linked dipeptide, or an amide linked tripeptide, or a mimetic thereof.
7. A nucleoside peptide molecule comprising a nucleoside monomer; a spacer monomer coupled to a nucleoside monomer, wherein the spacer monomer comprises one or more amide linked amino acid residues, or a mimetic thereof; and cap monomers attached to the spacer monomer.
- 35 8. A nucleoside peptide molecule of the formula I:

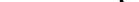


where X is H, -COOH, -OSO₂H, or (CH₂)_qSO₂H where q is 0 or 1, and R represents (Y)_m where Y is an amide linked amino acid residue and m is 1-3, Z' and Z are the same or different and represent hydroxyl or alkoxy, or Z' and Z together form an acetonide group, and wherein free NH₂ groups in the compound of the formula I are capped with a cap monomer.

9. A nucleoside peptide molecule of the formula I as claimed in claim 8 wherein X is H, -COOH, -OSO₂H or (CH₂)_qSO₂H where q is 0 or 1. Z and Z' are both hydroxyl or together form an acetonide group. R represents -NHCOR¹, wherein R¹ represents

10 (a) $-\text{C}(\text{CH}_3)(\text{NH}_2)\text{CH}_2-$ -R², wherein R² is alkoxy; or

(b) $-\text{CHR}^3\text{R}^4$ wherein R^3 is hydrogen or $-\text{NH}_2$, and R^4 is - R^5 wherein R^5 is

15 halogen, alkyl, or alkoxy,  . -CH₂N(CH₃)CH₂CH₂R⁶ or -N(CH₃)CH₂CH₂R⁶

wherein R⁶ is halogen.

20

-CH₂N(CH₃)CO- , -CH₂N(C₂H₅)CH₂CH(CH₃)OH, or -CH₂NHCOCH(CH₃)₂, or

R^4 represents $(CH_2)_nR^8$ wherein $n = 0$ to 5 , R^8 is halogen,  R^9 wherein R^9 is

alkoxy,    

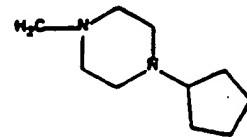
30 10. A nucleoside peptide molecule of the formula I as claimed in claim 8 wherein X is -COOH, and R represents -NHCOR¹ wherein R¹ represents -CHR³R⁴ wherein R³ is hydrogen and R⁴ is (CH₂)_nR⁵

wherein n = 0 to 5, preferably 1 to 4, R⁸ is halogen, alkyl,

35 
 $\text{r-N(CH}_2\text{)CH}_2\text{CH}_2\text{R}^{10}$ wherein R^{10} is halogen, $-\text{N}(\text{C}_2\text{H}_5)_2\text{CH}_2\text{CH}_2\text{OH}$, or $-\text{NHCOCH}(\text{CH}_3)_2$.

11. A nucleoside peptide molecule of the formula I as claimed in claim 8 wherein X is -COOH, and R represents -NHCOR¹ wherein R¹ represents -CHR³R⁴ wherein R³ represents -NH₂ and R⁴

5 is -R⁵ wherein R⁵ is halogen, alkyl or alkoxy.



-CH₂N(CH₃)CH₂CH₂R⁶ wherein R⁶ is halogen, -CH₂N(C₂H₅)CH₂CH(CH₃)OH,
CH₂NHCOCH(CH₃)₂

10



12. A nucleoside peptide molecule of the formula I as claimed in claim 8 wherein X is -OSO₃H, or (CH₂)_qSO₃H where q is 0 or 1, R represents -NHCOR¹ wherein R¹ represents -CHR³R⁴ wherein R³ represents -NH₂ and R⁴ is



-R⁵ wherein R⁵ is halogen, alkyl or alkoxy, -CH₂N(C₂H₅)CH₂CH(CH₃)OH, or
-CH₂NHCOCH(CH₃)₂.

20 13. A process for preparing a combinatorial library containing a predetermined collection of nucleoside peptide molecules for inhibiting the transfer of a sugar from a selected sugar nucleotide donor having a heterocyclic amine base, to a selected acceptor by a carbohydrate processing enzyme comprising:

25 (a) coupling one or more amino acids, or mimetics thereof to a nucleoside monomer unit which comprises a heterocyclic amine base coupled to a sugar wherein the base corresponds to the heterocyclic amine base of the sugar nucleotide donor, or a modified form or analogue of the base; and

(b) capping any free functional groups or amine groups with a cap monomer unit.

30 14. A method of using a combinatorial library as claimed in claim 1 for screening for pharmacologically active molecules.

35 15. A solid-phase bioassay for identifying a compound having inhibitory activity against a carbohydrate processing enzyme which comprises (a) coupling an acceptor for the carbohydrate processing enzyme to a polymer and coating onto a carrier; (b) adding a carbohydrate processing enzyme, a sugar nucleotide donor labeled with a detectable substance, and a test compound; (c) measuring the detectable change produced by the detectable substance; and (d) comparing to a control in the absence of the test compound wherein a decrease in the amount of detectable substance with the test compound indicates that the test compound has inhibitory activity against the enzyme.

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16. A method for identifying a compound that inhibits N-linked oligosaccharide processing comprising (a) reacting a test compound with cells expressing N-linked oligosaccharides in the presence of L-PHA and measuring alkaline phosphatase activity; and (b) comparing to a control in the absence of the compound wherein an increase in alkaline phosphatase activity indicates that the compound inhibits N-linked oligosaccharide processing.
17. A pharmaceutical composition containing a compound identified by a method as claimed in any one of claims 14, 15 or 16.

add A1

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